Canadian Aviation Safety Board
Bureau canadien de la sécurité aérienne

PRELIMINARY AVIATION SAFETY STATISTICS

FOR 1988

January 1989

Canada

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SUMMARY

Preliminary statistics for 1988 show that accidents to Canadian aircraft increased in 1988, but at a slower rate than did aviation activity. The number of fatal accidents declined in 1988 as did the fatalities. Incident reports, under the CASB's mandatory reporting requirements, increased significantly; but the number of such incidents (including losses of separation) which were determined to require a CASB investigation was essentially unchanged from 1987.

Canadian registered aircraft were involved in 495 accidents in 1988, a five percent increase over 1987. Aviation activity (flying hours) is estimated to have increased by approximately seven percent for the same period leading to a small decline in the accident rate (from 13.9 accidents per 100,000 flying hours to 13.4).

Despite the increase in aviation activity, both the number of fatal accidents and the number of fatalities declined in 1988 to 49 and 94 respectively. These figures are both below the average for recent years and are significantly lower than the fatality statistics of the early eighties.

Incidents (occurrences other than accidents) reported to the CASB increased significantly in 1988. Such reports include a wide variety of aviation occurrences which are required to be reported. The number of reports received by the CASB has been increasing rapidly over the last two years possibly reflecting greater awareness of the incident reporting system. Inflight loss of separation incidents investigated by the CASB increased only slightly in 1988 from 23 to 26 occurrences.

ACCIDENTS INCREASE BUT LESS THAN FLYING ACTIVITY

Following a significant drop in accidents in the early eighties, the number of accidents has followed essentially the same trend as aviation activity. This means that the accident rate (accidents per 100,000 flying hours) declined quickly from the early seventies until around 1982, and since then has remained fairly steady.

The number of accidents increased in 1988, but the flying hours also increased. It is estimated that the hours increased faster than accidents (7 percent versus 5 percent) so the accident rate dropped slightly (from 13.9 to 13.4 accidents per 100,000 flying hours).

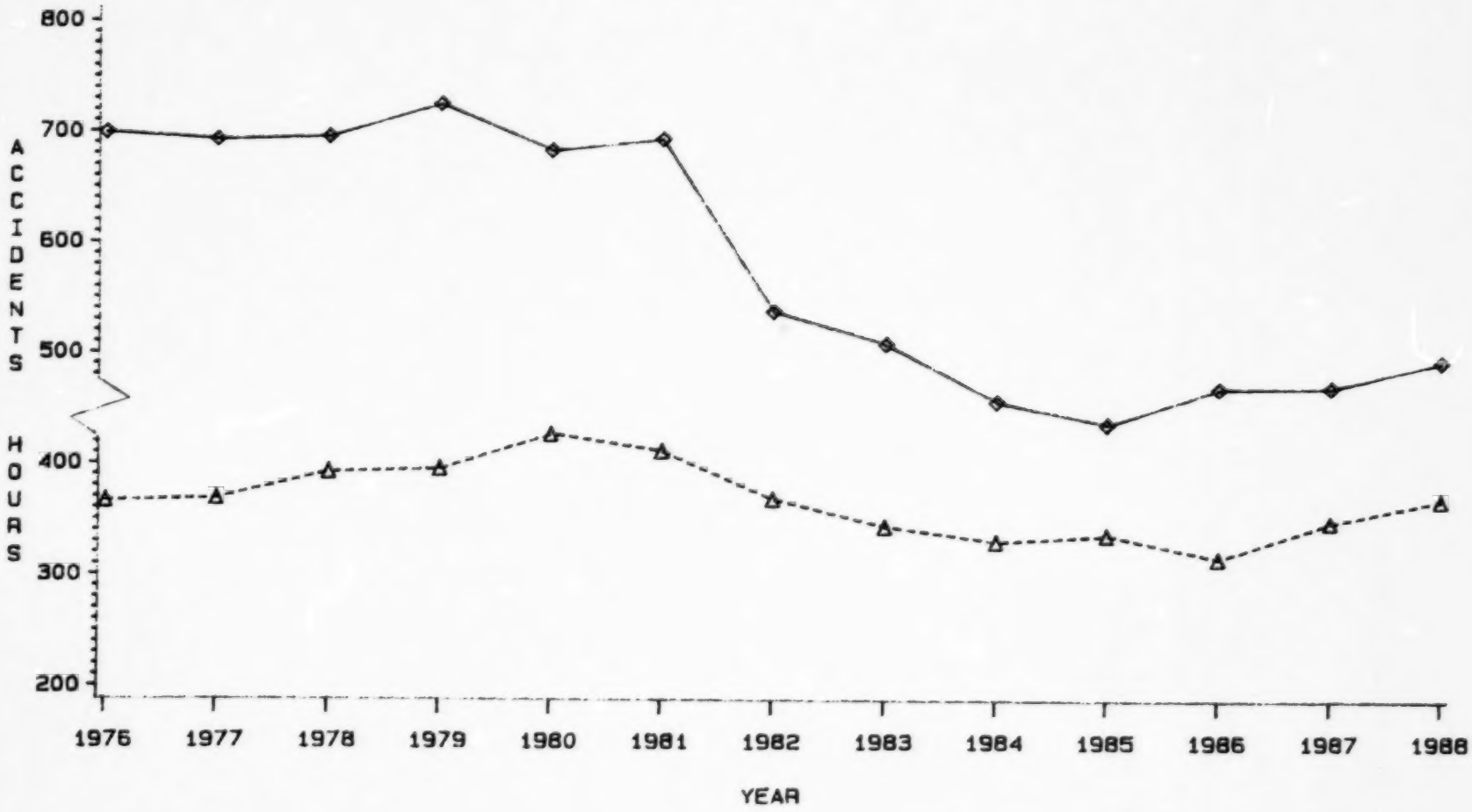
ACCIDENT RATE 1976 TO 1988

CANADIAN REGISTERED AIRCRAFT
ULTRALIGHT AIRCRAFT EXCLUDED

RATE PER 100 000 HOURS
HOURS 1987, 1988 ESTIMATED

ACCIDENTS, HOURS FLOWN 1976 TO 1988

CANADIAN REGISTERED AIRCRAFT
ULTRALIGHT AIRCRAFT EXCLUDED



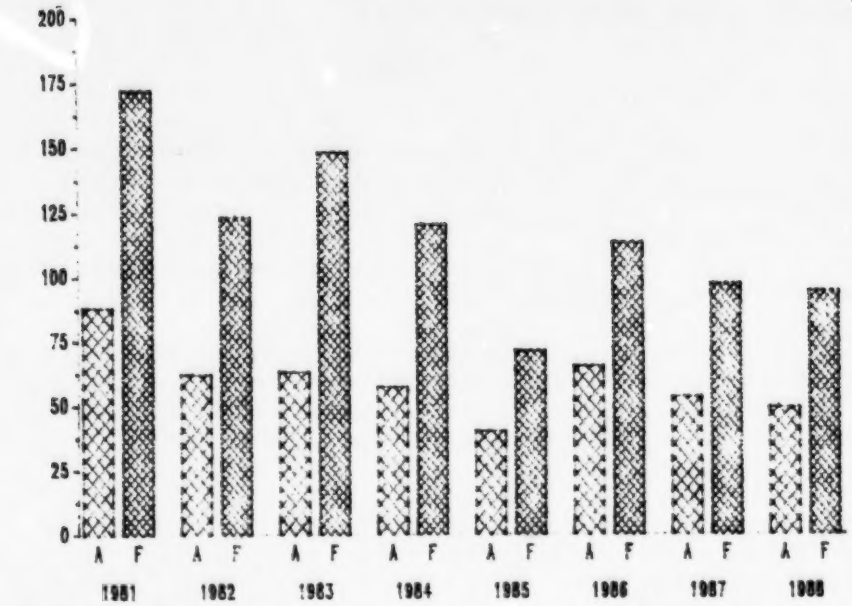
HOURS * 10000
HOURS 1987, 1988 ESTIMATED

FATAL ACCIDENTS DECLINE

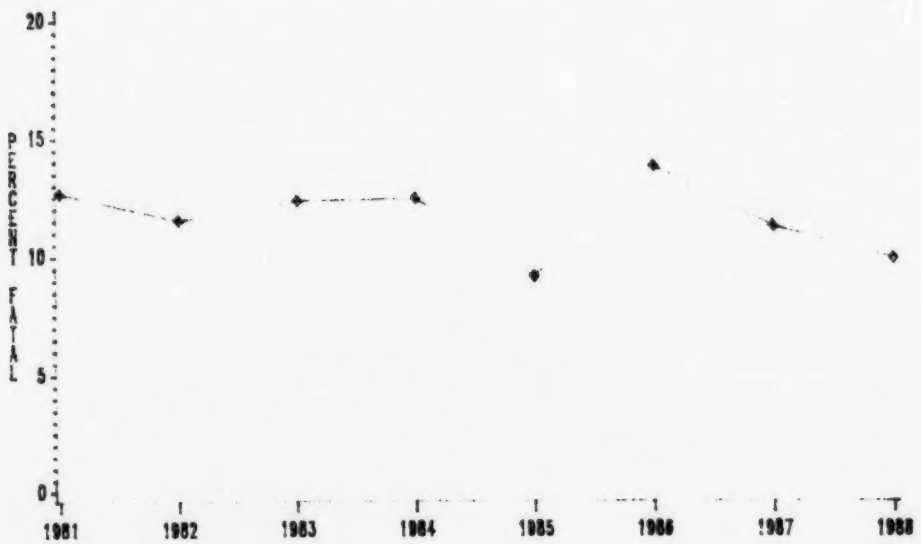
The number of fatal accidents and the number of fatalities was down in 1988. Both figures are lower than any year in the last ten years with the exception of 1985 which was an exceptionally low year for accidents involving Canadian aircraft.

The proportion of accidents involving fatalities has remained relatively constant over many years. This despite significant changes in the number of accidents over that same period.

FATAL ACCIDENTS AND FATALITIES
CANADIAN REGISTERED AIRCRAFT



PERCENTAGE OF ACCIDENTS INVOLVING FATALITIES



COMMERCIAL ACCIDENT RATE REMAINS STABLE

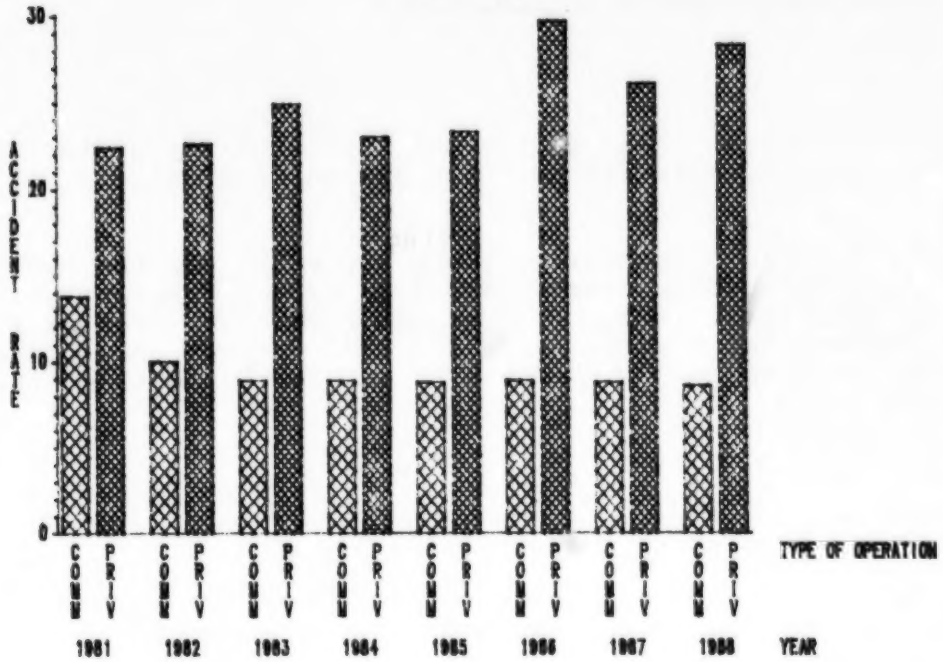
The chart illustrates the large difference in accident rates between commercially operated aircraft and private aircraft. The commercial accident rate has remained almost unchanged since 1983 at roughly 9 accidents per 100,000 flying hours. The majority of these accidents involve small commercial operators in charter, contract or specialty operations.

In 1988 there were two minor accidents involving scheduled operations. This compares to an average of slightly under two per year over the previous five years. 1988 marked the fifth consecutive year in which there were no fatal accidents involving Canadian registered large passenger jets.

The private accident rate is from two to three times that of commercial operations. After staying relatively stable through the first half of the eighties, the private rate has increased over the last few years to a level similar to that experienced in the late seventies. This reflects a decline in the reported hours flown by private operators rather than an increase in the number of accidents.

COMPARATIVE ACCIDENT RATES OF COMMERCIAL AND PRIVATE AIRCRAFT

(PER 100,000 HOURS)
BY YEAR
1981 TO DATE



ACCIDENTS BY CANADIAN REGION REMAIN STEADY

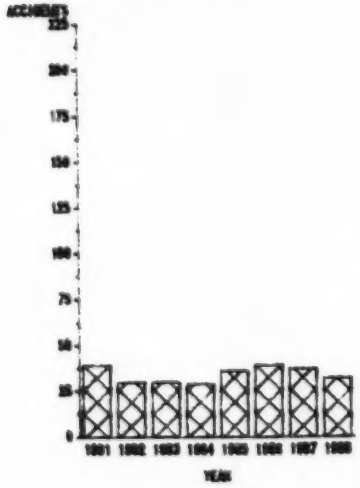
It should be noted that this chart shows the number of accidents not accident rates because flying hours are not available regionally.

After a decline in some regions in the early eighties, the number of accidents in each region has remained generally constant with some year-to-year fluctuations. For example, the 1988 figures for Quebec are higher than both the 1987 and 1986 figures, but it can be seen from the chart that this is a return to the level of the previous years.

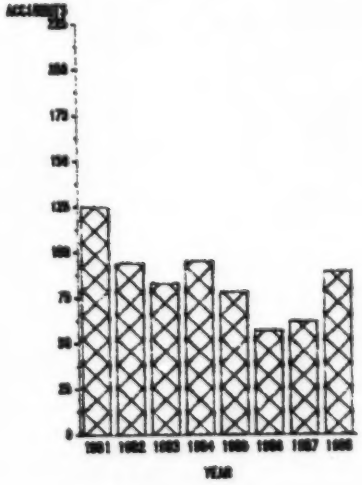
REGIONAL ACCIDENT TRENDS

NUMBER OF ACCIDENTS BY YEAR

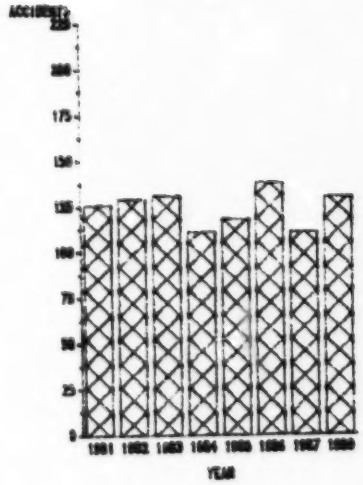
ATLANTIC CANADA



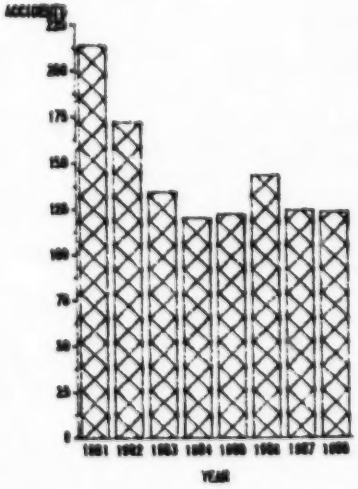
QUEBEC



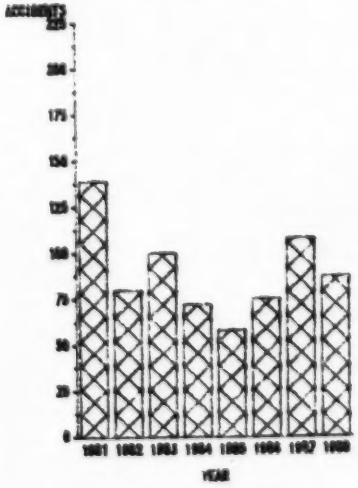
ONTARIO



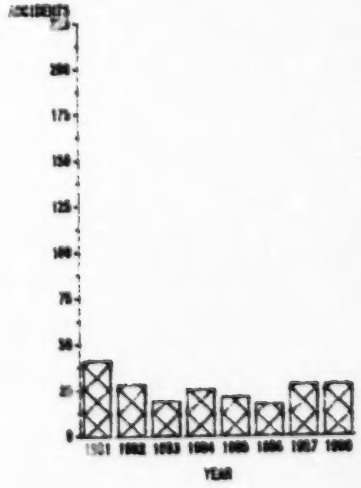
PRAIRIES



BRITISH COLUMBIA



YUKON, N.W.T.



NUMBER OF REPORTED INCIDENTS INCREASES SIGNIFICANTLY

The chart shows incidents reported to the CASB as mandatory reportable incidents. The column labelled "LOSS" refers to loss of separation incidents involving two aircraft in the air where at least one aircraft was over 5700kg. The second column refers to all other types of incidents reported to the CASB. There are 11 types of incidents which must be reported to the CASB if they involve an aircraft over 5700kg - these are:

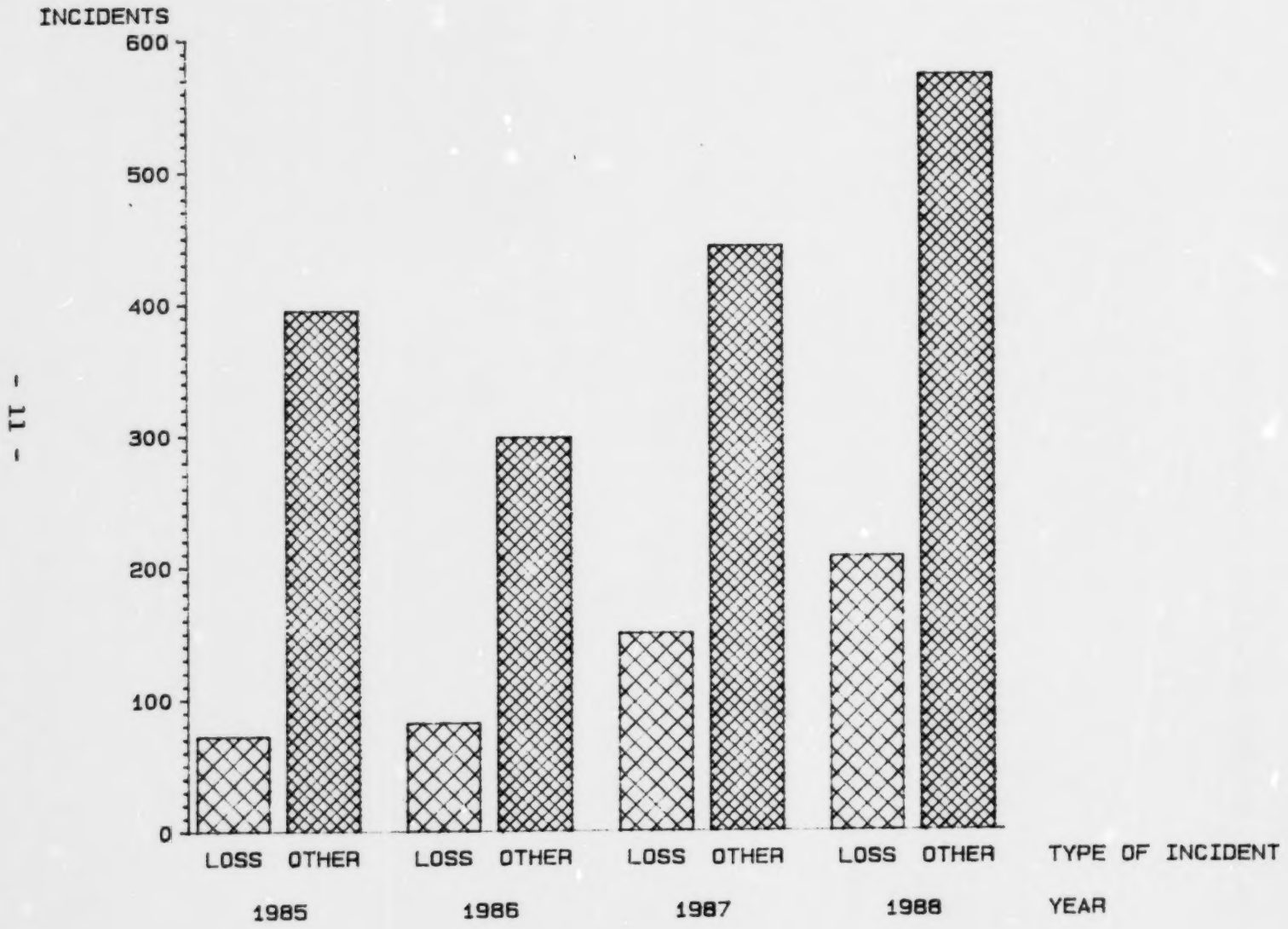
- Engine failure
- Smoke or fire
- Loss of control in flight
- Wheels-up landing or failure to remain in landing area
- Crew incapacitation
- Decompression
- Fuel exhaustion
- Incorrect or contaminated fuel
- Collision or risk of collision
- Declared emergency
- Leak of hazardous material

The CASB incident reporting system came into effect in December 1984, but awareness of the requirement to report, and the knowledge of what constitutes an incident has been gradually increasing within the aviation community and indeed may not yet be complete.

As can be seen the number of reported incidents in total has been increasing. (The somewhat higher figures in 1985 reflect some early confusion over the definitions of a mandatory reportable incident). Given the great variety of incident types included, the increase would suggest that at least some of the increase in reports is due to greater awareness of the reporting system and what constitutes an incident. This same factor seems to account for some of the increase in loss of separation reports.

INCIDENT REPORTING TRENDS:

MANDATORY REPORTABLE INCIDENTS

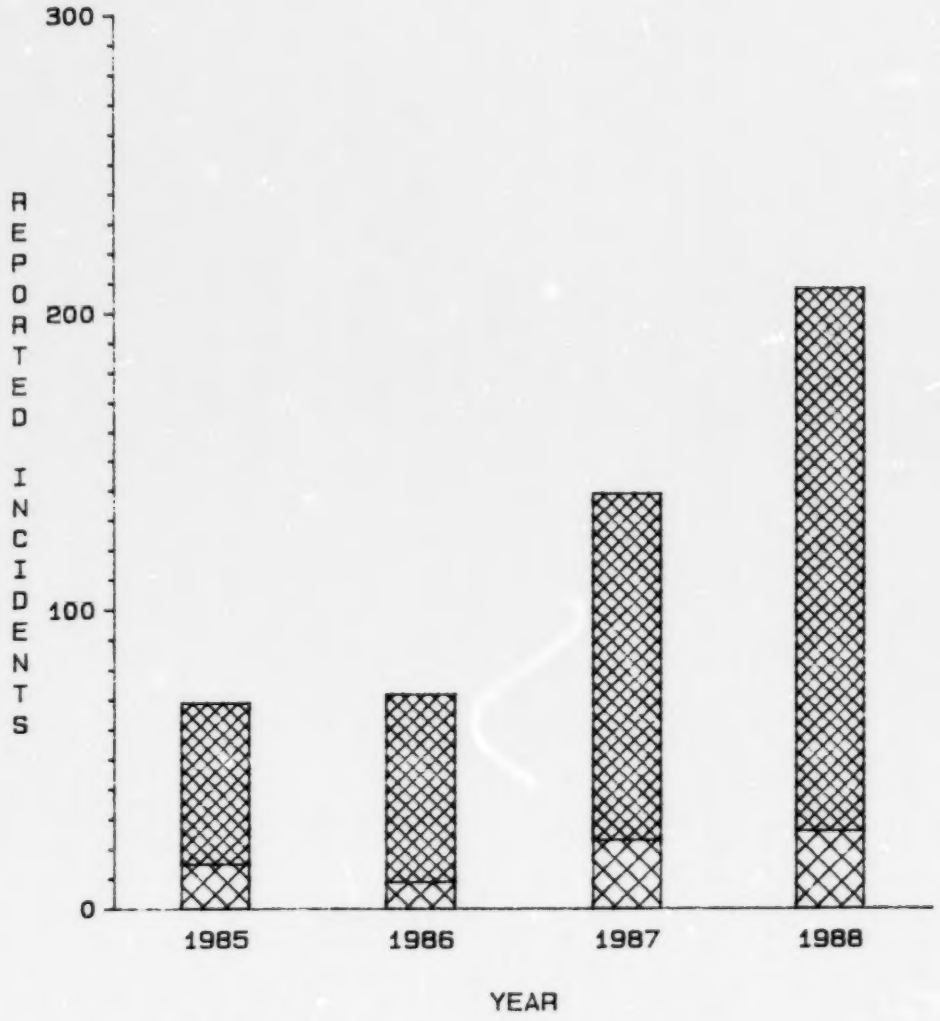


LOSS OF SEPARATION INCIDENT REPORTS INCREASE

As noted in the previous chart, there has been a large increase in loss of separation incidents reported to the CASB from 139 in 1987 to 208 in 1988. It should be noted that these figures include a large number of technical losses of separation where there was very little, if any, risk of a collision. The figure shown on the chart of incidents investigated by the CASB is a better indicator of the number of incidents during which there was judged to be a real risk of collision. While this figure did increase in 1988 from 23 to 26, this is not as large an increase as for the reported incidents. (It should be noted that almost all the incidents which are not investigated by the CASB are investigated by Transport Canada internally).

LOSS OF SEPARATION OCCURRENCES

CANADIAN TOTALS 1985 TO 1988



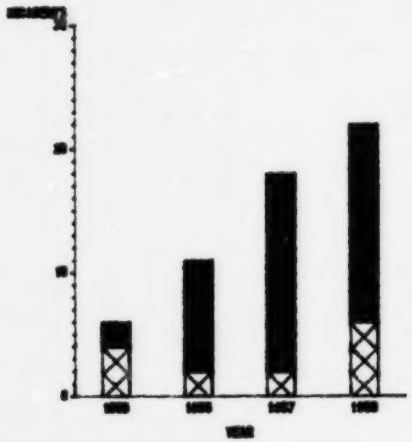
LOSS OF SEPARATION REPORTS AT MAJOR AIRPORTS INCREASE

The number of reported loss of separation incidents at Canada's three largest airports has increased in 1988. This is particularly true at Montreal and Vancouver. The increase in reports at Toronto has not increased significantly over the 1987 figure. However, there has been an increase in the number of incidents at Toronto where the CASB determined the risk of collision was sufficient to require investigation. It should be noted that in response to an awareness of possible safety problems relating to loss of separation occurrences, particularly at Toronto, the CASB focussed increasing attention on this issue over the course of 1988.

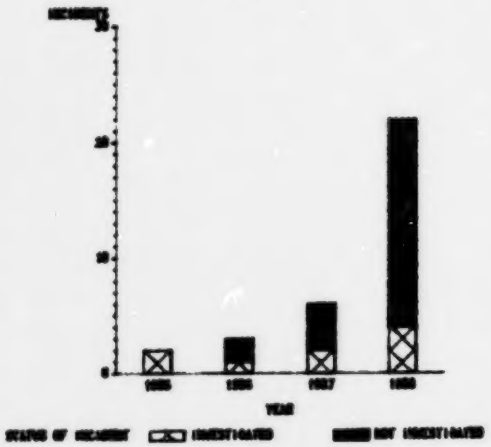
A complete list of the incidents investigated by the CASB is appended to this document.

LOSS OF SEPARATION REPORTS AT MAJOR AIRPORTS

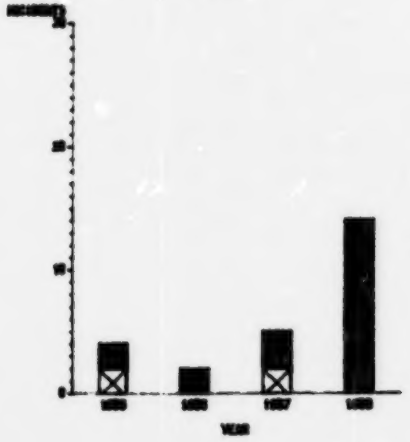
TORONTO AREA TOTALS



VANCOUVER AREA TOTALS



MONTREAL AREA TOTALS



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ANNEX A - STATISTICAL TABLES

TABLE 1 - ACCIDENTS BY YEAR, 1976-1988

TABLE 2 - ACCIDENTS BY YEAR, 1976-1988 - Commercial Operations

TABLE 3 - ACCIDENTS BY YEAR, 1976-1988 - Privately Registered

TABLE 4 - ACCIDENTS BY PROVINCE/REGION, 1976-1988

TABLE 5 - LOSS OF SEPARATION OCCURRENCES, 1985-1988

TABLE 6 - LOSS OF SEPARATION OCCURRENCES, 1985-1988 - Toronto, Vancouver and Montreal

NOTES TO THE TABLES

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TABLE 1

ACCIDENTS BY YEAR, 1976-1988
CANADIAN REGISTERED AIRCRAFT

YEAR	ACCIDENTS TOTAL	ACCIDENTS FATAL	FATALITIES	AIRCRAFT HRS FLOWN (millions)	ACCIDENT RATES PER 100,000 HRS TOTAL	ACCIDENT RATES PER 100,000 HRS FATAL
1976	699	89	178	3.6	19.5	2.5
1977	693	81	177	3.7	18.8	2.2
1978	696	93	245	3.9	17.7	2.4
1979	726	109	254	4.0	18.3	2.8
1980	684	76	149	4.3	16.0	1.8
1981	695	88	172	4.1	16.9	2.1
1982	539	63	123	3.7	14.6	1.7
1983	510	63	148	3.4	14.8	1.8
1984	458	57	118	3.3	13.8	1.7
1985	438	39	70	3.3	13.5	1.2
1986	472	65	113	3.2	14.8	2.0
1987	472	53	97	3.4(E)	13.9(E)	1.6(E)
1988	495(P)	49(P)	94(P)	3.7(E)	13.4(E)	1.3(E)

"P" - Preliminary
"E" - Estimated

TABLE 2

ACCIDENTS BY YEAR, 1976-1988
CANADIAN REGISTERED AIRCRAFT
Commercial Operations*

YEAR	ACCIDENTS TOTAL	ACCIDENTS FATAL	FATALITIES	AIRCRAFT HRS FLOWN (millions)	ACCIDENT RATES PER 100,000 HRS TOTAL	ACCIDENT RATES PER 100,000 HRS FATAL
1976	341	47	91	2.5	13.6	1.9
1977	294	28	72	2.3	12.8	1.2
1978	320	43	144	2.5	12.8	1.7
1979	382	59	161	2.6	14.6	2.3
1980	352	40	90	2.8	12.4	1.4
1981	367	41	87	2.7	13.8	1.5
1982	235	33	74	2.3	10.0	1.4
1983	193	20	69	2.2	8.9	0.9
1984	194	26	61	2.2	8.9	1.2
1985	193	18	42	2.2	8.8	0.8
1986	204	29	50	2.3	8.9	1.3
1987	211	23	44	2.4(E)	8.8(E)	1.0(E)
1988	241(P)	24(P)	53(P)	2.8(E)	8.6(E)	0.9(E)

"P" - Preliminary
"E" - Estimate

* Includes all operators licenced by the CTC including large and small airlines, charter operators, specialty services and flying schools.

TABLE 3

ACCIDENTS BY YEAR, 1976-1988
CANADIAN REGISTERED AIRCRAFT
Privately Registered*

YEAR	ACCIDENTS TOTAL	ACCIDENTS FATAL	FATALITIES	AIRCRAFT HRS FLOWN (millions)	ACCIDENT RATES PER 100,000 HRS TOTAL	ACCIDENT RATES PER 100,000 HRS FATAL
1976	358	42	87	1.1	33.1	3.9
1977	399	53	105	1.4	28.6	3.8
1978	376	50	101	1.4	26.2	3.5
1979	344	50	93	1.4	25.5	3.7
1980	332	36	59	1.4	23.4	2.5
1981	328	47	85	1.5	22.4	3.2
1982	304	30	49	1.3	22.6	2.2
1983	317	43	79	1.3	24.9	3.4
1984	264	31	57	1.1	23.0	2.7
1985	245	21	28	1.1	23.3	2.0
1986	267	36	63	0.9	29.7	4.0
1987	261	30	53	1.0(E)	26.1(E)	3.0(E)
1988	255(P)	25(P)	41(P)	0.9(E)	28.3(E)	2.8(E)

"P" - Preliminary
"E" - Estimate

* Includes state aircraft.

TABLE 4

ACCIDENTS BY PROVINCE/REGION
Canadian Registered Aircraft

YEAR	TOTAL IN CANADA		ATLANTIC		QUEBEC		ONTARIO		PRAIRIES		B.C.		TERRITORIES	
	ACCS	FATAL AC	ACCS	FATAL AC	ACCS	FATAL AC	ACCS	FATAL AC	ACCS	FATAL AC	ACCS	FATAL AC	ACCS	FATAL AC
1976	678	83	40	7	142	14	164	19	208	17	87	18	37	8
1977	673	75	39	4	118	11	165	14	205	23	113	18	33	5
1978	673	86	37	4	120	17	139	15	219	17	129	30	29	3
1979	703	103	44	8	135	19	175	18	198	31	122	23	29	4
1980	675	74	31	4	137	16	152	15	183	16	136	19	36	4
1981	684	85	39	6	125	15	126	12	214	20	139	28	41	4
1982	533	59	30	2	94	8	129	9	172	17	80	18	28	5
1983	497	56	30	3	83	9	131	13	134	9	100	17	19	5
1984	452	55	29	5	95	11	111	7	120	13	72	14	25	5
1985	433	36	36	2	78	8	118	5	122	10	58	10	21	1
1986	470	65	39	2	57	11	138	9	144	20	75	21	17	2
1987	470	53	37	5	62	12	111	11	124	11	108	12	28	2
1988	489(P)	45(P)	32(P)	3(P)	89(P)	8(P)	130(P)	15(P)	123(P)	8(P)	87(P)	10(P)	28(P)	1(P)

"P" - Preliminary

TABLE 5

LOSS OF SEPARATION OCCURRENCES
(Involving at least two aircraft in the air)

1985 TO 1988

PROVINCE/REGION	YEAR	INCIDENTS[1] CASB INVESTIGATED	INCIDENTS[1] TOTAL REPORTED[4]	ACCIDENTS[2] TOTAL
Atlantic	1985	1	6	0
	1986	2	9	0
	1987	3	16	0
	1988	6	21	0
Quebec	1985	2	8	1
	1986	1	6	1
	1987	4	8	0
	1988	0	36	1
Ontario	1985	6	14	0
	1986	4	26	1
	1987	5	50	0
	1988	7	50	0
Prairies	1985	2	4	0
	1986	1	5	0
	1987	4	17	0
	1988	5	19	0
British Columbia	1985	3	5	0
	1986	1	6	0
	1987	4	16	0
	1988	4	33	1
Northwest Territories	1985	0	0	0
	1986	0	1	0
	1987	2	2	0
	1988	0	7	0
TOTAL WITHIN CANADA[3]	1985	14	37	1
	1986	9	53	2
	1987	22	109	1
	1988	22	166	2
Foreign	1985	1	32	0
	1986	0	19	0
	1987	1	30	0
	1988	4	42	0
TOTAL INCLUDING FOREIGN[3]	1985	15	69	1
	1986	9	72	2
	1987	23	139	1
	1988	26	208	2

TABLE 6

LOSS OF SEPARATION OCCURRENCES
(involving at least two aircraft in the air)

1985 TO 1988

		INCIDENTS		ACCIDENTS
LOCATION	YEAR	CASB INVESTIGATED	TOTAL REPORTED	TOTAL
Toronto Area[5]	1985	4	6	0
	1986	2	11	0
	1987	2	18	0
	1988	6	22	0
Montreal Area[6]	1985	2	4	1
	1986	0	2	1
	1987	2	5	0
	1988	0	14	1
Vancouver Area[7]	1985	2	2	0
	1986	1	3	0
	1987	2	6	0
	1988	4	22	1

NOTES TO TABLES

1. Two or more aircraft in the air, at least one aircraft over 5700 kg.

2. Two or more aircraft in the air, includes accidents in which all aircraft are below 5700 kg.

3. In addition, the following incidents in which all aircraft were less than 5700 kg and were therefore not included in the table above, were investigated by the CASB.

INVESTIGATED BY CASB
(ALL AIRCRAFT UNDER 5700KG)

	1985	1986	1987	1988
IN CANADA	0	5	2	3
OUTSIDE CANADA	0	0	0	0
TOTAL	0	5	2	3

4. Mandatory reportable incidents:

Shortly after the creation of the CASB, a new mandatory reporting system was put into effect which inter alia requires that: "for aircraft with a maximum certified take-off weight greater than 5700 kg, any incident whereby a collision or risk of collision with any other aircraft or with any vehicle, terrain or obstacle occurs, including a collision or risk of collision that may be related to air traffic control procedures or equipment failures, shall be reported to the CASB." (This definition includes situations involving an apparent loss of separation between two aircraft in the air).

5. The Toronto area is defined as the airspace within one-half a degree of latitude and longitude of L. B. Pearson International airport. The area covers approximately 48 kilometres (30 miles) north, south, east and west of the airport. This area corresponds approximately to the Terminal Control area for Toronto. Losses of separation which occur during approaches to and departures from Pearson International are included, as are losses of separation at Hamilton and Toronto Island airports.

NOTES TO TABLES

6. The Montreal area is defined as the airspace within one-half a degree of latitude south of Dorval and north of Mirabel, and one-half a degree of longitude east of Dorval and west of Mirabel. This area corresponds approvimately to the Terminal Control areas for Dorval International airport and Mirabel International airport. Losses of separation which occur during approaches to and departures from Mirabel International and Dorval International are included, as are losses of separation at St. Jean and St. Hubert airports.

7. The Vancouver area is defined as the airspace within one-half a degree of latitude and longitude of Vancouver International airport. The area covers approximately 48 kilometres (30 miles) north, south, east, and west of the airport. This area corresponds approximately to the Terminal Control area for Vancouver. Losses of separation which occur during approaches to and departures from Vancouver International are included, as are losses of separation at Victoria and Boundary Bay airports.

ANNEX B - LISTS OF OCCURRENCES

- FATAL ACCIDENTS TO CANADIAN AIRCRAFT IN 1988

- LOSS OF SEPARATION INCIDENTS INVESTIGATED BY THE CASB IN 1985 TO 1988

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FATAL ACCIDENTS TO CANADIAN AIRCRAFT
1988

FILE	LOCATION	DATE	AIRCRAFT TYPE	FATALITES
ATLANTIC REGION				
A80047	CHARLO N. B.	FEB 22	CESSNA 402	6
A80221	HOPEDALE	SEP 02	BRITTEN ISLANDER	1
A80223	MARGAREE FORKS	SEP 02	BELL 206	1
QUEBEC REGION				
Q80150	STE-JULIE	JUN 08	PIPER PA-28	2
Q80172	ST SIMONE	JUN 26	CESSNA 172	2
Q80227	LAC GUILLAUME	AUG 02	DE HAVILLAND BEAVER	2
Q80233	LAC DAVID	AUG 14	PIPER SUPER CUB	2
Q80274	LAC DES BAIES	SEP 20	CESSNA 180	1
Q80284	ST RAYMOND	OCT 01	CESSNA 172	1
Q80318	LAC RAYMOND	NOV 20	CESSNA 425	1
Q80340	ROUYN	DEC 10	HOMEBUILT	1
ONTARIO REGION				
O80046	LAKE ONTARIO	FEB 11	SWEARINGEN 226	2
O80108	ORILLIA	APR 02	CESSNA 150	1
O80178	LEAMINGTON	MAY 22	WITMAN TAIWIND	2
O80194	NORTH NORT	MAY 27	HUGHES 269A	1
O80203	HAWK LAKE	JUN 05	DEHAVILLAND BEAVER	2
080213	GRANITEHILL LAKE	JUN 11	DEHAVILLAND BEAVER	1
O80224	GANANOQUE	JUN 18	CESSNA 150	1

FILE	LOCATION	DATE	AIRCRAFT TYPE	FATALITES
ONTARIO REGION (Cont'd)				
O80293	ELLIOT LAKE	AUG 02	HOMEBUILT	1
O80367	BRANTFORD	SEP 09	HOMEBUILT	1
O80401	MOOSONEE	SEP 30	BELL 206B	1
O80414	CAMBRIDGE	OCT 08	PIEL CP30	1
O80491	CHAPLEAU	NOV 29	BEECH 100 KING AIR	4
O80521	WELLAND	DEC 18	CESSNA 172	1
CENTRAL REGION				
C80009	MINISTIKWAN LAKE	JAN 08	CESSNA 150	2
C80011	LUMSDEN	JAN 09	HUGHES 269A	2
C80042	BALMORAL	FEB 27	CHAMPION CITABRIA	2
C80052	SPIRIT WOOD	MAR 06	CESSNA 170	3
C80213	PIKANGIKUM	NOV 01	DOUGLAS DC-3	2
C80217	NARCOLA	NOV 22	CESSNA 182	2
WESTERN REGION				
W80126	GRIMSHAW	JUN 29	CESSNA 310	2
W80234	FT. SIMPSON	OCT 16	BEECH 90 KING AIR	3
W80238	ELBOW LAKE	OCT 21	CESSNA 180	1
W80249	EDMONTON	NOV 10	CESSNA 180	3
PACIFIC REGION				
P80007	RICHMOND	JAN 17	HOMEBUILT	1
P80010	THETIS ISLAND	JAN 24	CESSNA 172	4
P80096	TELEGRAPH CEEK	MAY 21	CESSNA 150	2
P80157	SALMO	JUL 27	GRUMMAN S2 TRACKER	1

FILE	LOCATION	DATE	AIRCRAFT TYPE	FATALITES
PACIFIC REGION (Cont'd)				
P80169	BRONSON CREEK	AUG 03	BELL 206B	2
P80174	FORT WARE	AUG 08	DE HAVILLAND BEAVER	3
P80202	GOOSE BAY	SEP 02	CESSNA 185	4
P80203	KAMLOOPS	SEP 02	BEECH 23	3
P80209	WOOLRIDGE	SEP 11	PIPER SUPER CUB	1
P80221	VANDERHOOF	SEP 27	BELL 206B	2
P80246	ENTIAT	SEP 09	BELL 204B	2
HEADQUARTERS INVESTIGATION				
H80002	ALBUQUERQUE	MAR 25	CESSNA 421	2
H80009	REYKJAVIK	AUG 02	CASA 212	3
H80010	JOHN DAY	JUL 14	DE HAVILLAND DHC-6	1
H80011	CHENEY	SEP 15	HAWKER SIDDELEY 748	2

LOSS OF SEPARATION OCCURRENCES INVESTIGATED BY THE CASB

FILE NUMBER	DATE	LOCATION	AIRCRAFT 1	AIRCRAFT 2
1985				
A54902	07-02-85	ST. JOHN'S 138 SE	BOEING 707	LOCKHEED L-1011
A54908	19-03-85	GREENLAND	ILYUSHIN 62	MCDONNELL-DOUGLAS DC10
C54001	28-01-85	THUNDER BAY 10 NW	BOEING 737	PIPER 31
O54180	15-02-85	PEARSON INTL. 5 N	BOEING 767	CESSNA CITATION II
O54183	08-07-85	TORONTO VOR 5 SW	BOEING 767	PIPER 23
O54185	22-07-85	PEARSON INTL.	MCDONNELL-DOUGLAS DC9	BEECH 55
O54186	09-08-85	PEARSON INTL.	CONVAIR 580	PIPER 31
O54926	02-06-85	TORONTO VOR 11 S	BOEING 727	CESSNA 172
P54021	26-07-85	PITT MEADOWS	BOEING 737	CESSNA 210
P54045	17-07-85	VANCOUVER INTL.	BOEING 737	BOEING 737
P54046	24-09-85	VANCOUVER INTL.	DE HAVILLAND DHC7	CESSNA 210
Q54055	09-05-85	MONTREAL F.I.R.	BOEING 767	HAWKER SIDDELEY 125
Q54102	11-09-85	DORVAL INTL. 5 NE	CONVAIR 440	CESSNA 172
W54012	14-02-85	CALGARY VOR 6 N	BOEING 767	PIPER 31
W54058	04-06-85	CALGARY INTL.	GATES LEARJET 35	CESSNA 310
1986				
A64103	04-07-86	ST. JOHN'S	GULFSTREAM 690D	LOCKHEED C130
A64104	19-08-86	GANDER	DE HAVILLAND DHC8	CESSNA 185
O64002	08-01-86	PEARSON INTL.	BOEING 737	BELL 206
O64068	14-05-86	OTTAWA INTL.	MCDONNELL-DOUGLAS DC9	CANADAIR CL-601
O64199	25-11-86	TIMMINS AIRPORT	DE HAVILLAND DHC8	DE HAVILLAND DHC6
O64914	30-08-86	KLEINBURN	B.A.C. CONCORDE	PIPER 28
P64046	22-06-86	VANCOUVER INTL. 7 E	BRITISH AEROSPACE 125	CESSNA 210
Q64099	27-11-86	QUEBEC 9 NE	SWEARINGEN SA-226	PIPER 31
W64010	07-03-86	CALGARY INTL.	PIPER 44	BOEING 727

FILE NUMBER	DATE	LOCATION	AIRCRAFT 1	AIRCRAFT 2
1987				
A74058	14-06-87	STEPHENVILLE 69 W	MCDONNELL-DOUGLAS F-4	MCDONNELL-DOUGLAS CF-188 HORNET
A74100	16-09-87	STEPHENVILLE	MCDONNELL-DOUGLAS DC9	CESSNA 180
A74112	22-10-87	SCHEFFERVILLE	MCDONNELL-DOUGLAS DC8	MCDONNELL-DOUGLAS DC10
A74947	08-07-87	NORTH ATLANTIC	LOCKHEED L-1011	BOEING 747
A74959	05-08-87	HALIFAX 15 E	MCDONNELL-DOUGLAS DC10	MCDONNELL-DOUGLAS DC10
C74008	20-02-87	THUNDER BAY 7 W	BOEING 737	CESSNA 172
C74048	17-07-87	FLIN FLON 20 E	BOEING 737	UNIDENTIFIED LIGHT TWIN ENGINE
C74100	13-11-87	REGINA 15 NW	MCDONNELL-DOUGLAS DC9	CESSNA 210
H74001	08-07-87	CALGARY INTL.	BOEING 727	CESSNA 152
H74901	22-09-87	DORVAL INTL.	BOEING 727	MCDONNELL-DOUGLAS DC9
O74041	18-02-87	PEARSON INTL. 55 NW	BOEING 767	BOEING 727
O74054	12-03-87	PEARSON INTL. 8 SE	SAUNDERS ST27	PIPER 44
O74230	20-10-87	TORONTO 85 NW	BOEING 767	DE HAVILLAND DHC8
O74926	03-11-87	PEARSON INTL.	MCDONNELL-DOUGLAS DC10	BOEING 737
P74052	02-06-87	KAMLOOPS	BOEING 737	BOEING 737
P74107	29-09-87	PRINCETON 4 W	DE HAVILLAND DHC7	DE HAVILLAND DHC7
P74117	13-10-87	BOUNDARY BAY 3 E	MCDONNELL-DOUGLAS DC10	CESSNA 185
P74127	15-11-87	VANCOUVER INTL. 8 W	PIPER 31	BOEING 727
Q74058	08-06-87	DORVAL INTL.	BOEING 727	SWEARINGEN SA-226
Q74104	15-09-87	KUUJJUARAPIK 35 S	BOEING 737	HAWKER SIDDELEY 748
W74053	01-06-87	EDMONTON MUNICIPAL	CONVAIR 640	BEECH 55
W74102	09-10-87	ALERT 60 W	BOEING 747	MCDONNELL-DOUGLAS DC10
W74139	07-12-87	WHITEHORSE	BOEING 737	DE HAVILLAND DHC6

FILE NUMBER	DATE	LOCATION	AIRCRAFT 1	AIRCRAFT 2
1988				
A80058	07-03-88	OYSTER INTERSECTION	BOEING 747	MCDONNELL-DOUGLAS DC10
A80097	14-04-88	SAINT JOHN 20 N	BEECH 200	NORTHRUP F-5
A80109	26-04-88	CHARLOTTETOWN	GRUMMAN S2 TRACKER	CESSNA 172
A80146	15-06-88	ST. JOHN'S	BOEING 737	BEECH 200
A80147	15-06-88	CHATHAM 20 N	CESSNA 185	GRUMMAN EF111A
A80171	07-07-88	CHARLOTTETOWN	DE HAVILLAND DHC8	PIPER 34
A80186	24-07-88	MONCTON	MCDONNELL-DOUGLAS DC9	DE HAVILLAND DHC8
A80191	27-07-88	NORTH ATLANTIC	MCDONNELL-DOUGLAS DC8	MCDONNELL-DOUGLAS CF-18
A80233	19-09-88	NORTH ATLANTIC	MCDONNELL-DOUGLAS DC10	LOCKHEED L-1011
A80297	10-12-88	NORTH ATLANTIC	ILYUSHIN 62	BOEING 707
C80220	29-11-88	REGINA 37 MI NW	FOKKER F28	BOEING 737
O80036	30-01-88	HAMILTON AIRPORT	BRITISH AEROSPACE BA 31	PIPER 44
O80250	06-07-88	PEARSON INTL.	BOEING 727	BOEING 727
O80269	14-07-88	KLEINBURG 5 E	DE HAVILLAND DHC8	PIPER 60 602P
O80411	06-10-88	COEHILL	MCDONNELL-DOUGLAS DC10	MCDONNELL-DOUGLAS DC10
O80452	06-11-88	PEARSON INTL.	BOEING 747	AEROSPATIALE 310
O80478	22-11-88	KLEINBURG	SHORT SD-3-30	PIPER 42
O80527	20-12-88	PEARSON INTL.	BOEING 737	BOEING 727
P80021	07-02-88	VANCOUVER INTL. 2 W	MCDONNELL-DOUGLAS DC9	CESSNA 402
P80117	10-06-88	VANCOUVER INTL.	CESSNA 402	SHORT 360
P80152	25-07-88	VANCOUVER INTL. 30 W	DE HAVILLAND DHC8	DE HAVILLAND DHC8
P80296	23-12-88	VANCOUVER INTL.	PIPER 31	BOEING 737
W80107	04-06-88	CALGARY INTL.	MCDONNELL-DOUGLAS DC9	BOEING 737
W80111	14-06-88	URANIUM CITY 20 S	BOEING 747	BOEING 747
W80146	18-07-88	EDMONTON MUNICIPAL	DE HAVILLAND DHC8	CESSNA 310
W80156	29-07-88	EDMONTON INTL. 5 W	ISRAEL IAI-1124	BEECH 200

ANNEX C - DEFINITIONS (CASB ACT AND REGULATIONS)

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DEFINITIONS (CASB ACT AND REGULATIONS)

"aviation occurrence" means (a) any accident or incident associated with the operation of an aircraft, and (b) any situation or condition that the Board has reasonable grounds to believe could, if left unattended, induce an accident or incident described in paragraph (a);

"accident" means any aviation occurrence where, at any time during the period commencing when the first person boards an aircraft for the purpose of flight and ending when the last person disembarks from the aircraft after the flight,

a) a person, other than a stowaway, sustains a serious injury or fall injury, that is not self-inflicted or inflicted by another person or caused by natural causes, as a result of that person

   i) being in the aircraft

   ii) coming into direct contact with any part of the aircraft, including any part that may have become detached from the aircraft, or

   iii) being directly exposed to the jet blast of the aircraft,

b) the aircraft sustains damage or structural failure adversely affecting the structural strength performance or flight characteristics of the aircraft and normally requiring major repair or replacement of any affected component part, other than damage or failure that is limited to

   i) the engine, its cowlings, or its accessories

   ii) the propellers, wing tips, antennae, tires, brakes or fairings, or

   iii) small dents or puncture holes in the aircraft skin, or

c) the aircraft is missing or is completely inaccessible;

"incident" means an aviation occurrence, other than an accident that affects or could affect the safe operation of an aircraft;

"reportable incident" means any incident involving an aircraft with a maximum certified take-off weight greater than 5 700 kg where

a) an engine fails,

b) smoke or fire occurs, other than an engine fire that is contained within the engine and does not result in engine failure or damage to other component parts of the aircraft,

c) difficulties in controlling the aircraft in flight are encountered due to any aircraft system malfunction, weather phenomena, wake turbulence, operations outside the approved flight envelope, or uncontrolled vibrations,

d) the aircraft fails to remain within the intended landing or take-off area, lands with one or more landing gear retracted, or drags a wing tip or engine pod,

e) any crew member is unable to perform his flight duties as a result of incapacitation,

f) decompression, explosive or otherwise, occurs that necessitates an emergency descent,

g) a fuel shortage occurs that necessitates a diversion or requires approach and landing priority at the destination of the aircraft,

h) the aircraft is refuelled with the incorrect type of fuel or contaminated fuel that is undetected prior to departure from the ramp,

i) a collision or risk of collision with any other aircraft or with any vehicle, terrain or obstacle occurs, including a collision or risk of collision that may be related to air traffic control procedures or equipment failures,

j) a flight crew member declares an emergency or indicates any degree of emergency that required priority handling by an air traffic control unit or the standing by of crash, fire fighting or rescue services, or

k) toxic gases or corrosive materials leak from any cargo aboard the aircraft;